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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/670,000	09/25/2000	James M. Holden	M-9455 US	3656

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KAO, CHIH CHENG G

ART UNIT	PAPER NUMBER
2882	10

DATE MAILED: 03/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/670,000	Applicant(s) HOLDEN ET AL.	
	Examiner Chih-Cheng Glen Kao	Art Unit 2882	

-- The MAILING DATE of this communication appears on th cover sh et with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-29 is/are pending in the application.

4a) Of the above claim(s) 17-26 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1,2,9,10 and 13-15 is/are rejected.

7)☒ Claim(s) 3,-8,11,12,16,27-29 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 25 September 2000 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,3,5-9 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

   I. Claims 1-16 and 27-29, drawn to a measuring apparatus with a rotatable element and polarizer, classified in class 250, subclass 225.

   II. Claims 17-26, drawn to a measuring apparatus with further spectral analysis, classified in class 356, subclass 303.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention I has separate utility such as obtaining intensity levels to display an image. No further analysis is required. See MPEP § 806.05(d).

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Michael J. Halbert on February 19, 2002, a provisional election was made without traverse to prosecute the invention of I, claims 1-16 and 27-29. Affirmation of this election must be made by applicant in replying to this Office action.

Claims 17-26 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Drawings

2. The drawings are objected to under 37 CFR 1.83(a) because they fail to show "labeled representation (e.g., a labeled rectangular box)" for Fig. 1, #102, 122, 126, 130, 136, and 134. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to because #254 and #256 in Figure 3 does not correspond to "(step 254)" and "(step 256)" in the specification (col. 7, lines 26-29). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. An amendment to the specification to match the corresponding step the correct reference number may also obviate this objection. The objection to the drawings will not be held in abeyance.

Specification

4. The specification is objected to for the following informality. Applicant is reminded of the proper language and format for an abstract of the disclosure. The abstract should be in narrative form. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The phrase ", in accordance with the present invention," is recited on page 26, lines 15 and 16. This objection may be obviated by deleting ", in accordance with the present invention,".

5. The specification is objected to for the following informality. The term "r- θ sample stage" as shown on Page 2, lines 1-3 is indefinite. The movement with regards to "r" does not seem to be defined in the specification, drawings, and claims in any way except for rotating to properly align the incident radiation with the grating. It is indefinite as to what type of rotation occurs. This objection may also be obviated by amending the specification to define the rotation in the "r- θ sample stage". The subject matter may come from U.S. Serial No. 09/036,557. However, the Examiner deems such incorporation as essential subject matter. The applicant may be required to furnish the Office with a copy of the reference material together with an affidavit or declaration stating that the copy consists of the same material incorporated by reference in the referencing application. See MPEP 608.01(p).

6. The Examiner notes that U.S. Serial No. 09/036,557 is incorporated by reference as shown on Page 1, lines 25-26. Applicant is reminded that if the instant application should

become a patent, the pending application incorporated by reference may be supplied to the public. See MPEP 103 and 37 CRF 1.14 for further details.

Claim Objections

7. Claims 12 and 27 are objected to because of the following informality. There is no antecedent basis for defining the limitations associated with an "r- θ sample stage" in claim 12, lines 1-2, and claim 27, line 6 specifically. The term "r- θ" is not defined by the claim, specification, or drawings in such a way to ascertain the exact rotation involved with the term "r". For purposes of examination, the "r- θ sample stage" has been treated as a stage that rotates about the central axis normal to the stage and sample and in the axis parallel to the radiation beam. In other words, the "r- θ sample stage" just rotates. Appropriate correction is required.

8. Claim 13 is objected to because of the following informality. There are two steps labeled "(f)". Appropriate correction is required.

9. Claim 13 is objected to because of the following informality. The limitation "said sample" is recited in line 6 and 7 of claim 13. There is insufficient antecedent basis for this limitation in the claim. This objection may be obviated by inserting --on a sample-- after "a diffracting structure" in line 1 of claim 13. Appropriate correction is required.

10. A warning to Claim 29 is noted by the Examiner under 37 CFR 1.75 as being a substantial duplicate of claim 12. When two claims in an application are duplicates or else are so

close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 1, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosencwaig et al. (US Patent 5,596,406). Rosencwaig et al. shows an apparatus (Fig. 2) and method comprising: a radiation source emitting broadband radiation (Fig. 2, #32), a rotating polarizing element with radiation passing through a polarizing element toward a sample (Fig. 2, #122), at least one of a polarizing element and sample rotatable (col. 10, lines 7-20), reflected radiation passing though a rotating polarizing element (col. 2, #132), and a spectrograph with a dispersing element (col. 7, lines 38-44) that detects the intensity at a plurality of polarization orientations (Fig. 2, #64, and col. 9, lines 31-35). However, Rosencwaig et al. does not seem to specifically disclose reflected radiation passing through the said polarizing element.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the reflected radiation passing through the said polarizing element with the device of Rosencwaig et al., which is explained with motivation as follows. To have the reflected radiation pass through the said polarizing element, one having only routine skill in the

art would have found it obvious to form in one piece an article, which has formerly been formed in two pieces and put together. One would be motivated to integrate the polarizers together to save space and make the device smaller for convenience. Secondly, with regards to the diffracted structure, the functional recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from an obvious modification of a prior art apparatus satisfying the claimed structural limitations.

12. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rosencwaig et al. as applied to claim 1, and further in view of Ledger (US Patent 5,555,474). Rosencwaig et al. suggests an apparatus as recited above. However, Rosencwaig et al. does not seem to specifically disclose a computer system with at least one computer and program executed to extract spectral information.

Ledger shows a processor to extract spectral information (Fig. 1, #28a). The Examiner takes Official Notice that a processor is conventionally used for computer systems with at least one computer and program.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have a computer system to extra spectral information of Ledger with the suggested apparatus of Rosencwaig et al., which is explained with motivation as follows. One would be motivated to have a processor to extract spectral information to process information for optical models (Fig. 5a and 5b) to easily identify diffracting structures in a sample. One would be motivated to use a computer system with at least one computer and program for a user-friendly system to analyze data and have user interfaces.

13. Claims 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosencwaig et al. in view of Conrad et al. (US Patent 5,963,329). For purposes of being concise, Rosencwaig et al. shows a method as recited above. However, Rosencwaig et al. does not seem to specifically disclose repeating steps for a plurality of orientations to determine at least one parameter.

Conrad et al. teaches repeating the steps for a plurality of orientations to determine at least one parameter (Fig. 12).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to repeat steps of Conrad et al. with the method of Rosencwaig et al., since one would be motivated to have thorough data to check for accurate data as implied by Conrad et al. (col. 10, lines 52-55).

14. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rosencwaig et al. as applied to claim 13 above, and further in view of Ledger. Rosencwaig et al. suggests a method as recited above. However, Rosencwaig et al. does not seem to specifically a reference database for comparison.

Ledger teaches a reference database for comparison (Fig. 2, "E").

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to generate a reference database for comparison with the suggested method of Rosencwaig et al., since one would be motivated obtain a best fit curve in a conventional

computation flow (col. 8, lines 66-67, to col. 9, lines 1-134) to obtain a best fit image according to the acquired information.

Allowable Subject Matter

15. Claims 3-8, 11, 12, and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 3, prior art does not specifically disclose or fairly suggest curve fitting calculated spectral information to extracted spectral information in combination with all the limitations in the claim, intervening claim, and base claim.

Regarding claim 7, prior art does not specifically disclose or fairly suggest curve fitting with: $R(\Theta) = A \cdot \cos^4(\phi - \Theta) + B \cdot \sin^4(\phi - \Theta) + C \cdot \cos^2(\phi - \Theta) \cdot \sin^2(\phi - \Theta)$ in combination with all the limitations in the claim, intervening claim, and base claim.

Regarding claims 11, 12, and 16, prior art does not specifically disclose or fairly suggest rotating the surface in combination with all the limitations in the claim and base claims.

Regarding claim 14, prior art does not specifically disclose or fairly suggest generating a reference database for comparison to detected intensities in combination with all the limitations in the claim and base claim.

16. Claims 27-29 would be allowable if rewritten or amended to overcome the objections(s) set forth in this Office action.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 27, prior art does not specifically disclose or fairly suggest rotating the surface in combination with all the limitations in the claim.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (703) 605-5298. The examiner can normally be reached on M - Th (8 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

gk
March 9, 2002

ROBERT H. KIM
SUPERVISORY PATENT EXAMINER
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